

CLAIMS

What is claimed is:

- 1 1. A method of performing cubic mapping with texturing, comprising
2 selecting neighboring pixels to be mapped;
3 computing normals of the neighboring pixels;
4 mapping the normals of the pixels to faces of a cube, wherein the neighboring pixels are
5 such as to be mapped to adjacent faces of the cube, and each face has an identifying number, a
6 level of detail (LOD) number, and a pair of texture coordinates for defining a mip-map for the
7 face; and
8 computing an LOD parameter for the texture coordinates of the neighboring pixels based
9 on continuity-adjusted derivatives of the texture coordinates.
- 1 2. A method of performing cubic mapping as recited in claim 1, wherein the step of computing
2 an LOD parameter includes:
3 obtaining a continuity adjustment code based on the identifying numbers for each of the
4 adjacent faces;
5 using the adjustment code to compute an approximation to derivatives of the texture
6 coordinates, the approximation including an adjustment to maintain continuity of the derivatives
7 across the adjacent faces; and
8 computing the LOD parameter based on the continuity-adjusted derivatives.
- 1 3. A method of performing cubic mapping as recited in claim 2, wherein the continuity
2 adjustment code is obtained from a table of codes, the table being indexed by the identifying
3 numbers for the faces.
- 1 4. A method of performing cubic mapping as recited in claim 2,
2 wherein the approximation to the derivative of the texture coordinates is based on the
3 difference between the texture coordinates of the neighboring pixels; and
4 wherein the continuity adjustment includes swapping coordinates in a pair of texture
5 coordinates.

1 5. A method of performing cubic mapping as recited in claim 4,
2 further comprising the step of normalizing the texture coordinates prior to computing the
3 LOD parameter; and
4 wherein the continuity adjustment includes compensating for the normalizing step.

1 6. A method of performing cubic mapping as recited in claim 5, wherein the step of
2 compensating includes adding or subtracting one.

1 7. A method of performing cubic mapping as recited in claim 2,
2 wherein the approximation to the derivative of the texture coordinates is based on the
3 difference between the texture coordinates of the neighboring pixels; and
4 wherein the continuity adjustment includes negating one of the texture coordinates.

1 8. A method of performing cubic mapping as recited in claim 7,
2 further comprising the step of normalizing the texture coordinates prior to computing the
3 LOD parameter; and
4 wherein the continuity adjustment includes compensating for the normalizing step.

1 9. A method of performing cubic mapping as recited in claim 8, wherein the step of
2 compensating includes adding or subtracting one.